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He thought there could be little doubt that the members of the nitrogen series are isodimorphs, forming two isomorphous series, one rhombic and the other monometric; and that it was highly probable that the residuals he had noticed in some of the elements might be owing to a difference in the atomic weights of those elements in their two allotropic states.

An interesting discussion followed Professor Cooke's communication, in which Professor W. B. Rogers, Professor H. D. Rogers, and Professor Peirce took part. It was stated by Professor Peirce that the number *seven*, omitted in the common differences between the atomic weights of the elements, was also omitted in the series of fractions representing the relative distances of the planets from the sun, and the distribution of leaves around the stem of a plant.

Professor Agassiz made a communication on the fundamental law of distribution of organic forms. Further remarks on the same subject were made by Professor H. D. Rogers, in respect to its geological relations; by Dr. Pickering, who described the method he had followed in his researches respecting the distribution of animals; and by Professor Peirce.

Three hundred and ninety-second meeting.

January 10, 1854. — SEMI-MONTHLY MEETING.

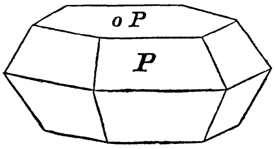
The PRESIDENT in the chair.

The Corresponding Secretary, by appointment, acted as Recording Secretary, after the reading of the proceedings of the last meeting by J. Hale Abbott, the Secretary *pro tem.* of that meeting.

Dr. Hayes made a verbal communication on the disappearance of marsh-gas (light carburetted hydrogen) in nature, — occurring, as he had ascertained, by its spontaneous combustion, converting it into carbonic acid and water at ordinary temperatures, even at 32° Fahr. He had ascertained the same fact in respect to carbonic oxide also.

Remarks on this communication were made by Professor Cooke and Professor Horsford.

Professor Cooke made the following communication: —



P on $o\,P$ = 122° 15′
P on P = 129 56
R on R = 85 47
a = 1.374

"The above drawing is an accurate representation of a crystal of rhombic arsenic which was picked out from a quantity of sublimed arsenic. The length of the lateral axes is about one third of an inch, and the crystal almost perfect. The angle of *P* on *o P* was measured by a reflective goniometer, which reads to minutes. The faces were very perfect, but somewhat dull, owing to a slight tarnish. This made it difficult to measure with the usual signals, but the difficulty was easily overcome by making the measurements in a darkened room, and using for the upper signal a horizontal slit cut in a piece of turned iron about four inches in length and one fourth of an inch in diameter, which was fastened to the upper part of a window-sash, and the rest of the window covered with black cloth. The lower signal was a black line drawn on a white card. In this way very perfect and sufficiently bright images of reflection were obtained, as will appear from the fact that the greatest difference between twelve measurements did not exceed two minutes. The angle given (*P* on *o P*) is the mean of the twelve. The other angles were obtained by calculation.

"The angle *R* on *R*, as given by G. Rose, is 85° 4′, by Breithaupt 85° 26′, by Miller 85° 41′. My own measurements gave 85° 47′. This difference, too great to be referred to any errors of observation, is probably occasioned by apparent variations in the angle produced by striæ. Of ten or twelve crystals which I have examined, the one described above was the only one which had perfect planes. On some larger crystals, having the same form as the one described, the angle *R* on *R* measured approximately 85° 20′ and 80° 31′. The variation from the normal angle was evidently caused by striæ, which spread out the image of the signal into a broad band formed apparently by several images overlapping each other. (In measuring, the brightest portion of this band was selected as the starting-point.)

These striæ were most developed on the face P, and corresponded to the edges of planes of cleavage, which, as is well known, is eminent parallel to $o\,P$. One of these angles is almost identical with that given by Breithaupt. I place, however, no confidence on the accuracy of the measurement, on account of the imperfection referred to. It is, however, worthy of remark, that the angles of Rose, Breithaupt, and my own, give semiaxes divisible by fourteen, or so slightly differing from a multiple of fourteen, that the difference is fully covered by the possible errors of observation. We might conclude from this that the three observers had measured angles between different planes of the same series, were it not that the ratios between the parameters are so improbable as will appear from the following table : —

R on $R = 85^{\circ}\ 4'$	$a = 1.402$	nearly	14×100	Rose.
R on $R = 85\ 26$	$m\,a = 1.388$	"	$14 \times 99\,m = \frac{99}{100}$	Breithaupt.
R on $R = 85\ 41$	$m\,a = 1.378$			Miller.
R on $R = 85\ 47$	$m\,a = 1.374$	"	$14 \times 98\,m = \frac{98}{100}$	Cooke.

Dr. Charles Pickering, at the request of Professor Agassiz, exhibited a map illustrating the distribution of quadrupeds over the earth; and Professor Agassiz exhibited, and compared with this, a map which he had just prepared, illustrating the distribution of animals generally.

On motion of Mr. Treadwell, it was

" *Voted*, That the second monthly meeting of the present month be passed over, on account of the occurrence of the quarterly meeting in this month.

Three hundred and ninety-third meeting.

January 25, 1854. — QUARTERLY MEETING.

The PRESIDENT in the chair.

The Corresponding Secretary read a letter from the Academy of Natural Sciences, Philadelphia, acknowledging the reception of Vol. V. Part I. of the Memoirs of the Academy.

Messrs. Treadwell, Emerson, and Eliot were appointed a committee to arrange for a course of lectures before the Lowell Institute the next season. The course for 1853-4 was